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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/559,493

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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

PAPER NUMBER

1791

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,493	<b>Applicant(s)</b> BOSCH ET AL.	
	<b>Examiner</b> RUSSELL J. KEMMERLE III	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19, 20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19, 20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 102***

Claims 1-17, 19, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Frauenkron (US Patent 6,562,971).

Frauenkron discloses a method of forming a body which involves mixing a zeolite powder with silica (which acts as a binder), extruding the mixture, and calcining the formed body at 500°C for 5 hours (Col 14 line 65 – Col 15 line 6). While the example used in that passage is a zeolite powder of silica and titania, Frauenkron also discloses that the powder could be a mixture of silica and alumina (see Claim 1, Col 15 lines 55-56). The shaped body is further treated by exposure to a gas including water vapor at a temperature of 345°C (Col 15 lines 10-22). This process is disclosed as being carried out continuously (Claim 2), which would include for longer than 20, or even 50, hours, and at an absolute pressure of 0.1-10 bar (Claim 14).

Referring to claims 3 and 4, the treatment is carried out at a WHSV of 1 kg/(kg\*h) (1 g/(g\*h)) (Col 15 lines 18-19).

Referring to claim 6, Frauenkron discloses that during the water vapor treatment the body is arranged in a fixed bed (Col 7 lines 13-14)

Referring to claims 7 and 8, Frauenkron discloses that when an aluminosilicate is used as the catalyst, the silica/alumina molar ratio should be between 1,400:1 and 40,000:1 (Claim 1)

Referring to claims 9 and 10, Frauenkron discloses that the zeolite material is preferably of the pentasil type, and preferably at least partially in the  $H^+$  and/or  $NH_4^+$  form (Col 9 Line 66 – Col 10 line 11).

Referring to claims 11 and 13, Frauenkron discloses a method of making triethylenediamine (TEDA) by a reaction involving ethylenediamine (EDA) and piperazine (PIP) in the presence of the aluminosilicate zeolite catalyst discussed above (Claim 1)

Referring to claim 12, Frauenkron discloses that this process is carried out continuously and in the gas phase (Claims 2 and 3)

Referring to claims 14, 15, 16 and 17, these limitations are all disclosed by Frauenkron (Claims 9, 10, 13 and 14, respectively)

Referring to claims 19 and 20, the chemical synthesis process discussed above for making TEDA renders these claims anticipated.

Referring to claim 22, since Frauenkron discloses the method of claim 1 as discussed above, it would also anticipate the shaped body prepared by that method.

Thus, Frauenkron discloses every limitation of claims 1-17, 19, 20 and 22, and thus anticipates the claims.

### ***Double Patenting***

Claims 11-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 5-9 of U.S. Patent No. 7,115,742 (the '742 patent) (This rejection corresponds to the previous provisional double patenting rejection over application 10/359,244 but is now instead based on the issued patent, and therefore no longer provisional). Although the conflicting claims are

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not identical, they are not patentably distinct from each other because claim 11 of the current specification and claim 1 of the '742 patent both recite a process for preparing triethylenediamine (TEDA) by a reaction involving ethylenediamine (EDA) and a catalyst. While the current application requires the catalyst be an aluminosilicate, the co-pending application requires only that it is a zeolite catalyst made of silica and another metal oxide. While claim 1 does not claim that the other metal oxide be alumina, it would be obvious to one of ordinary skill in the art that such an aluminosilicate would be an obvious variant of the claimed catalyst based on the rest of the disclosure that discloses the use of alumina instead of the metal oxides recited in claim 1. Claim 1 also does not disclose that the catalyst be hardened according to a method of current claim 11, however this would have been obvious since the catalyst described in the '742 patent has been treated according to the limitations of current claim 11 (see Col 15 lines 10-61, substituting alumina for titania as discussed above). While claim 1 does not specifically disclose previously sintering the catalyst, one of ordinary skill in the art reading the specification would understand that the catalyst to be used should be previously calcined since that is the method disclosed in the specification.

Current claim 12 is rejected over claims 2 and 3 of the '742 patent that recite the same limitations. It would have been obvious to combine claims 2 and 3 since that is done at other parts in the specification.

Current claim 13 is rejected over claim 6 of the '742 patent that in addition to claim 1 as discussed above adds piperazine (PIP) to the process of making TEDA.

Current claims 14 and 15 are rejected over claims 5 and 7 of the '742 patent since it would have been within the ability of one skilled in the art to optimize the amount of PIP to be used in the reaction, and claim 5 discloses the use of 23-300 wt% of water based on the EDA.

Current claim 16 is rejected over claim 8 of the '742 patent that recites the same reaction temperature range.

Current claim 17 is rejected over claim 9 of the '742 patent that recites the same reaction pressure range.

Claims 11-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 9, 10, 13 and 14 of U.S. Patent No. 6,562,971. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 11 of the current specification and claim 1 of the patent both recite a process for preparing triethylenediamine (TEDA) by a reaction involving ethylenediamine (EDA) and an aluminosilicate catalyst. Patented claim 1 also does not disclose that the catalyst be hardened according to a method of current claim 11, however this would have been obvious since the catalyst described in the patent has been treated according to the limitations of current claim 11 (Col 14 line 65 – Col 15 line 23). It would have been further obvious to change the titania used in the example there to alumina as they are disclosed as being interchangeable in other parts of the disclosure (see for example claim 1). While claim 1 does not specifically disclose previously sintering the catalyst, one of ordinary skill in the art reading the specification

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would understand that the catalyst to be used should be previously calcined since that is the method disclosed in the specification.

Current claim 12 is rejected over patented claims 2 and 3 that recite the same limitations. It would have been obvious to combine co-pending claims 36 and 37 since that is done at other parts in the specification.

Current claim 13 is rejected over patented claim 1 that discloses adding piperazine (PIP) to the process of making TEDA.

Current claims 14, 15, 16 and 17 are rejected over patented claims 9, 10, 13 and 14, respectively, since they recite the same limitations.

While the inventive entity of the two applications discussed above is not the same, the assignee of both applications of the applications is the same. It is assumed that the subject matter of both applications were, at the time of invention, owned by or subject to an obligation of assignment to the same person, making the double patenting rejection proper (see 35 USC 103 (c)(1)).

### ***Response to Arguments***

Applicant's arguments filed 09 January 2008 have been fully considered but they are not persuasive.

Applicant argues that Frauenkron (6,562,971) does not teach that the shaped bodies are subjected to the water vapor treatment after calcining. This appears to be the argument in response to the rejection under 35 U.S.C. 102(b) in addition to the double patenting rejection with regard to both patents.

The Examiner respectfully disagrees. Frauenkron discloses that the treatment with water vapor (that is, the preparation of TEDA discussed in claim 1 and Example 1 Col 15 lines 7-40) is carried out on a catalyst that had previously been heat treated. Specifically, Example 1 is disclosed as using catalyst A, the preparation of which is disclosed at Col 14 line 65 - Col 15 line 6, and includes as a final step calcining at 500°C for 5 hours (Col 15 lines 5-6). Therefore, when catalyst A is treated with water vapor for the preparation of TEDA, it has been previously calcined.

With respect to the double patenting rejections, while the claims do not specifically disclose previously sintering the catalyst, one of ordinary skill in the art reading the specification would understand that the catalyst to be used should be previously calcined since that is the method disclosed in the specification.

With respect to the double patenting rejections, applicant further argues that the other references do not claim a method of increasing the cutting hardness of a shaped body.

This is not found to be persuasive because while the other references may not say that increasing the cutting hardness is the desired purpose of the process the process steps are the same and the result would be that the cutting hardness would be increased.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).



A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL J. KEMMERLE III whose telephone number is (571)272-6509. The examiner can normally be reached on Monday through Thursday, 7:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. J. K./  
Examiner, Art Unit 1791

/Eric Hug/  
Primary Examiner